



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,572	02/27/2002	Kotaro Endo	04329.2745	5894

22852 7590 04/14/2006

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER  
LLP  
901 NEW YORK AVENUE, NW  
WASHINGTON, DC 20001-4413

EXAMINER

CHOUDHURY, AZIZUL Q

ART UNIT PAPER NUMBER

2145

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/083,572	Applicant(s) ENDO, KOTARO	
	Examiner Azizul Choudhury	Art Unit 2145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,9 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Detailed Action***

This office action is in response to the correspondence received on January 17, 2006.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4-6, and 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1, 4-6 and 9-10 claim a "self computer." It is unclear to one skilled in the art as to what a "self computer" is. Appropriate corrections are required.
- Claims 1 and 6 claim "the majority of collected input data..." It is indefinite as to what a "majority of collected input data" truly constitutes. Appropriate corrections are required.
- Claims 4 and 9 claim "settled step is most advanced..." It is indefinite as to what qualifies as being "most advanced". Appropriate corrections are required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Ben-Or algorithm disclosed in "Distributed Algorithms," by Nancy A. Lynch, hereafter referred to as Lynch.

1. With regards to claims 1 and 6, Lynch teaches a distributed system which makes  $n$  computers, which are connected via a network, operate synchronously, and provides multiplexing of at least  $(n-f)$  computers,  $n$  being an integer and  $f$  being a maximum integer where  $3f < n$  (Lynch discloses how the Ben-Or algorithm works for  $n > 3f$  (p. 673, Lynch)), each computer comprising: an input candidate collection device configured to collect input data items, each of which is selected as a next candidate to be processed by each of  $n$  computers, via the network; a first input candidate selection control device configured to determine whether not less than  $(n-f)$  input data items having identical contents are present, when the input candidate collection device has collected the not less than  $(n-f)$  input data items, and to settle one of the input data items having identical contents as next data to be processed, when the not less than  $(n-f)$  input data items having the identical contents are present; a second input candidate selection control device configured to determine whether the majority of collected input data items having identical contents are present, when the first input candidate selection control device determines that the not less than  $(n-f)$  input data items having identical contents are not present, and to cause the input candidate collection device to reexecute collection after selecting the input data item as a self candidate and

discard the all input data items of other candidates, when the majority of collected input data items are present; and a third input candidate selection control device configured to cause the input candidate collection device to reexecute collection after arbitrarily selecting input data item from the collected input data items as a self candidate and discarding all input data items of other candidates, when the second input candidate selection control device determines that the majority of the collected input data items are not present; a journal device configured to hold the input data item settled by the first input candidate selection control device; a first input candidate adjustment control device configured to send the input data item held in the journal device as a settled input data item, when another computer collects an input data item of a step that has already been settled in the self computer; and a second input candidate adjustment control device configured to settle an input data item as next data to be processed, when the input data item is sent from another computer as a settled input data item upon collecting input data items by the input candidate collection device (Lynch discloses the Ben-Or algorithm which allows for a concept by which to provide fault tolerance in a distributed system. It accounts for the claimed  $(n-f)$  inputs and the method of input as well as the rounds needed by which to perform distributed fault tolerance computing with multiple computers (pp. 672-673, Lynch). As for the trait of being synchronous, it is well known in the art that asynchronous networks are an obvious variant of synchronous networks. As for the other traits claiming a journal (log) and data inputting

means, official notice is hereby taken, that it would have been obvious to one skilled in the art, to have such steps in order to execute the Ben-Or algorithm and to have the algorithm function properly. The claimed design is based on the Ben-Or algorithm and it is disclosed in Lynch (pp. 672-673, Lynch)).

2. With regards to claims 4 and 9, Lynch teaches a system wherein the journal device holds the input data items in an order from a latest input data item in correspondence with a predetermined number of steps, the first input candidate adjustment control device sends a predetermined message to another computer, when the journal device does not hold a settled input data item to be sent to another computer, and each computer further comprises: a state holding device configured to hold states of the self computer just before the settled input data item is processed in steps already settled in the self computer in correspondence with a predetermined number of steps; a state exchange device configured to exchange the state in each step held by the state holding device with another computer; and a skip device configured to acquire a state corresponding to the latest settled step of another computer, in which the settled step is most advanced among all the other computers, by the state exchange device, and to copy the acquired state to the self computer, when a sum of the number of collected input data items and the number of predetermined messages which are sent from the other computers is not less than  $(n-f)$ , and the number of collected input data items is less than  $(n-f)$  upon collecting input data items by the input

candidate collection device (The claimed steps are inherent in order for the Ben-Or algorithm to function properly. This is especially true since the algorithm requires steps such as "waits to obtain." The claimed design is based on the Ben-Or algorithm and it is disclosed in Lynch. Plus, Lynch discloses that within the algorithm, (pp. 672-673, Lynch). As for the other traits claiming a journal (log) and data handling means along with state means, official notice is hereby taken, that it would have been obvious to one skilled in the art, to have such steps in order to execute the Ben-Or algorithm and to have the algorithm function properly).

3. With regards to claims 5 and 10, Lynch teaches a system wherein each computer further comprises: a counter configured to count a virtual time used in a process of an input data item; a first input data item generation device configured to periodically generate a first input data item for giving an increment timing of a value of the counter; a second input data item generation device configured to generate a second input data item for giving a comparison timing between a system time and the virtual time counted by the counter, the second input data item including the system time of the self computer; and a virtual time adjustment device configured to compare the system time obtained from the second input data item with the virtual time counted by the counter, and to set an increment width of the value of the counter upon processing the first input data item to be large, when the system time leads the virtual time (The claimed steps

Art Unit: 2145

are inherent in order for the Ben-Or algorithm to function properly. This is especially true since the algorithm requires details such as "delivery time for the oldest message in transit..." The claimed design is based on the Ben-Or algorithm and it is disclosed in Lynch. Plus, Lynch discloses that within the algorithm, (pp. 672-673, Lynch). As for the other traits claiming a data handling means along with timer means, official notice is hereby taken, that it would have been obvious to one skilled in the art, to have such steps in order to execute the Ben-Or algorithm and to have the algorithm function properly).

#### ***Remarks***

The amendment received on January 17, 2006 has been carefully examined but is not deemed fully persuasive. In lieu of the amendments and remarks, the 102-type rejection has been changed to a 103-type rejection. In addition, the office action has been revised to better address the amended claims. In lieu of the remarks concerning the traits of "reexecute collection" and "discard all input data," such features are required and are obvious in designs that make use of software in any level. The "reexecute collection" feature simply refers to loops and conditional statements that are obvious and well known in the art. The "discard all input data," feature simply implies memory management means that are mandatory (and hence is inherently present) in any design that makes use of software at any level. Without proper memory management, all memory buffers will overflow and the software will fail to function. As per the remarks concerning the data handling (input) means, official notice is hereby

Art Unit: 2145

taken, that it would have been obvious to one skilled in the art, to have such steps in order to execute the Ben-Or algorithm and to have the algorithm function properly. As per the remarks concerning the number of rounds being related to the input candidates, the examiner believes the applicant's representative may have misunderstood the examiner's statements. In the advisory action, the examiner stated:

Finally, the applicant's representative addresses their concern over the number of "input candidate selection control devices." The applicant's representative makes an error by assuming that the number of rounds in the algorithm is equal to the number of "input candidate selection control devices." After reviewing the algorithm, it is clear that the number of rounds are clearly not relevant to the number of "input candidate selection control devices." The number of rounds applied simply are portion of the steps of the algorithm, no limitation is placed by the disclosure on the number of input devices that can be applied.

The examiner does not concede Lynch failing to disclose the input candidates. The examiner was simply trying to explain how the rounds did not necessarily correlate to the number of inputs as was being remarked upon by the applicant's representative. No limitation is placed on the number of input candidates within the Lynch prior art and hence, a finite number of input candidates cannot be read into the disclosure.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Azizul Choudhury whose telephone number is (571) 272-3909. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2145

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AC



**JASON CARDONE**  
**SUPERVISORY PATENT EXAMINER**